ZOOLOGICAL SOCIETY · MANITOBA ·

ZOOLOG

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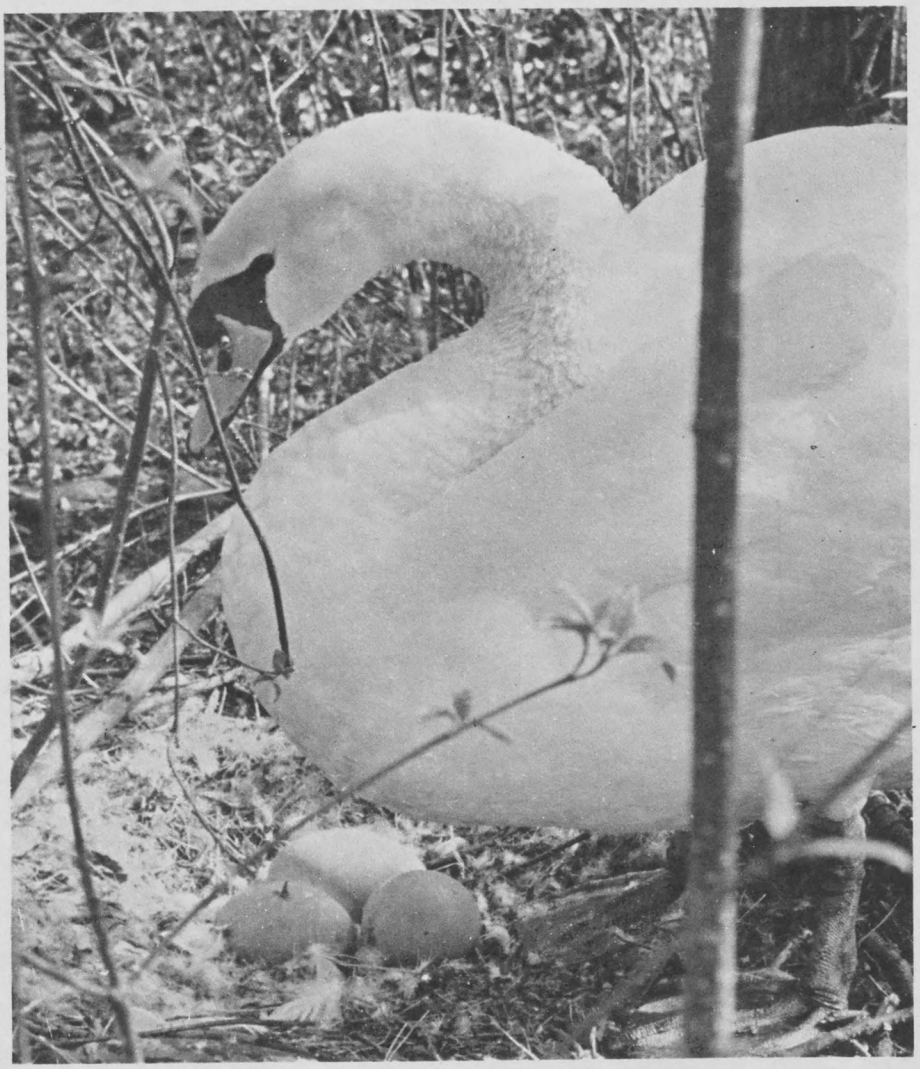

Mute Swan *(Cygnus olor)* settling on nest

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President's Message

The Annual Meeting of the Zoological Society of Manitoba is always a pleasant time for me, and more particularly this year, because of a rather special event which took place at that time. I am referring, of course, to the Memorial which was unveiled to the late Thomas R. Hodgson, who made such a major contribution as Superintendent of the Winnipeg Board of Parks during his tenure of office. It was under Tom that the early stages of redevelopment of the Zoo took place and, notably, the elimination of the old bear pits and the creation of the new Bear Range which is now appropriately marked with his name.

The occasion of this dedication, brings to mind some of the ancient history (if 20 years can be considered ancient) of the creation of the Zoological Society, which many readers will know arose from the old Zoo Advisory Committee that was set up by the Winnipeg Board of Parks not long after World War II. This was back in the days when there was no full-time zoo director, and people such as Tom Hodgson and Dick Sutton filled in this responsibility on a part-time basis. In order to help the Parks Board reach decisions on technical matters pertaining to the operation of the Zoo, a Zoo Advisory Committee was formed, and while I was not one of the very early members I came into this group, as I recall, about 1952.

In the late fifties, largely under leadership provided by the Hon. Richard S. Bowles before he was Lieutenant Governor of Manitoba, the Zoological Society of Manitoba was incorporated out of the Zoo Advisory Committee. Over the years a number of people had left bequests and given donations to the City of Winnipeg for zoo purposes. Due to certain peculiarities in the laws of the City, this money could not be directed exclusively to zoo use and so it was held in trust and turned over to the Zoological Society as our Foundation Grant. I am happy to be able to report to you that this amount of money still exists as working capital for the Society and has been very important to assure our continued operation.

I am sure that memories of all that has gone before, flooded back to many of us at the moment Mrs. Kay Hodgson pulled the ribbon that dropped the covering from the plaque honoring our good friend of years gone by, Tom Hodgson.

Whooper Found Dead

A dead whooping crane was found near Dorrance in central Kansas. It was lying on a road after a violent thunderstorm on April 13th. The crane weighed 11½ pounds and had a wing spread slightly in excess of seven feet. The information we have states an autopsy showed the bird died of multiple fractures, including a broken skull, neck, ribs and shoulder bones. It may have struck a power line next to the road. It was further stated "The unfortunate thing is the bird was a female and probably would have laid eggs this spring."

From "Grus Americana"

And It's All Free

Harold Hosford

Photos by Harold Hosford

Purple Finch *(Carpodacus purpureus purpureus)*; look for it near the spruces

A lot has been written and said about the artificial attractions of Metropolitan Winnipeg's park system. We hear about the zoo, pavilions, conservatories, steam trains, toboggan slides, picnic tables, food bars, paved roads and parking lots. Attractive as these may be, they cost money.

But there are other attractions in our parks, attractions which are free, that nature put there, and which make no demands on the taxpayer. In fact they, in total, are the real reason for the existence of our parks. I'm speaking of the natural attractions, the trees, shrubs, rivers and wild birds and animals. All these facilities ask of us is that we enjoy them but disturb them as little as possible.

I'd like to talk about the birds, the birds of Assiniboine Park. Specifically the summer birds of Assiniboine Park.

On most any summer day a diligent searcher scouring the park might turn up as many as 60 different kinds of birds nesting there. They'd range in size from a monster of the night, the Great Horned Owl, to the diminutive Ruby-throated Hummingbird. They could be found in holes in river banks, holes in trees, mud nests under bridges and eaves, on the ground and last but by no means least, in grass and twig nests in the trees and shrubs. In short, there are few places in the park that are not used by the birds.

A run-down of the list of avian residents of Assiniboine Park would start with the waterfowl. At least one kind of duck nests there, the Mallard. Once a hen mallard caused quite a stir around the duck pond by nonchalantly marching her four ducklings across the road, only to be stumped by the chain link fence around the pond. It was only a temporary reverse because a few minutes later she had her brood safely inside the fence.

The hawks and owls would be represented too. On several occasions families of Great Horned Owls have seen the first light of day from spruce trees inside Assiniboine Park. While they haven't been found nesting in the park recently, Cooper's Hawks were once fairly regular residents of the high ashes and maples just east of the Old English Garden.

In natural cavities, and holes made by the birds themselves, Hairy and Downy Woodpeckers, Flickers, Crested Flycatchers, Chickadees and White-breasted Nuthatches would be raising families.

In other kinds of holes — those in river banks — Kingfishers, Bank Swallows and Rough-winged Swallows could be found. The Rough-winged Swallows are a bit of a rarity but they have been seen occasionally feeding over the duck pond during the nesting season, indicating that they may be nesting in the riverbank nearby.

Under the foot-bridge that crosses the Assiniboine River between the Park and Portage Avenue, one can find hundreds of little gourd-shaped nests made of clay pellets, the homes of Cliff Swallows, leaders in avian architecture.

Among the ground nesters would be Rufous-sided Towhees. They once were regular summer residents of the oak woods now occupied by the steam train, but may now have moved on, another victim of progress. Not far away, in the bison enclosure, Killdeers regularly nest and, well hidden among the vegetation along the Assiniboine River bank, Spotted Sandpipers will be tending house.

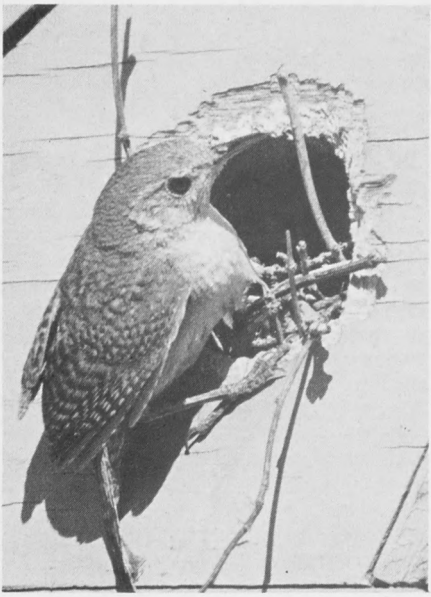
Of the tree nesting species such familiar birds as Robins, Catbirds, Brown Thrashers and Yellow Warblers will be most common. But Baltimore Orioles, Least Flycatchers, Kingbirds, Warbling Vireos and Wood Pewees will not be far behind.

Space does not permit a complete listing of all the birds you are likely to find in Assiniboine Park this summer but one or two more very special ones are worth mentioning.

If you should hear a robin-like song that is just enough different from the usual robin song, check it out. It might be a male Rose-breasted Grosbeak resplendent in his black and white plumage with red gorget. He's a dutiful husband and if you watch quietly you may see him go to his nest to help with family responsibilities.

Last, and certainly not least, are the Ruby-throated Hummingbirds. The Old English Garden is their centre of activity. Only the most fortunate searcher would find their tiny lichen-covered nests in the oaks, ashes and elms which surround the garden. But whether you find the nest or not you can be sure they are there. Just visit the garden any evening late in July or August and you will see these Lilliputian combatants quarrelling over property rights while they gather nectar for their families.

These are only a few of the attractions nature has to offer in our parks in summer. In spring and fall their numbers are swelled by passing migrants. And they're all free. All you need is a little patience to enjoy them.



House Wren (*Troglodytes aëdon*), a small but noisy summer resident

White-breasted Nuthatch (*Sitta carolinensis*), a familiar year-round resident

Brown Thrasher (*Toxostoma rufum rufum*), — mimic extraordinary

Our Zoo Animal Collection (7)

Gunter Voss
Dr. rer. nat.

While contributions in the past have mostly dealt with specific groups of animals, this one is to reflect on one aspect of animal keeping right across our entire collection. The aspect referred to is, successful breeding.

Our Assiniboine Park Zoo has gained a fair reputation for successful breeding in recent years. The best documentation is to be found in a part of our annual report, which is presently submitted to the Director of the Parks and Protection Division of the Metropolitan Corporation of Greater Winnipeg. Traditionally, one of the highlights of this annual report is the listing of species of which young creatures were hatched or born at our Assiniboine Park Zoo. The list for the year 1967 comprises ten forms of birds and thirty different kinds of mammals, as follows:

Births and Hatchings

Egyptian Goose, Alopochen aegyptiacus
Mallard, Anas platyrhynchos platyrhynchos
Mottled Duck, Anas platyrhynchos fulvigula
Blue Eared Pheasant, Crossoptilon auritum
White-crested Kalij, Gennaeus (Lophura) leucomelanus hamiltoni
Swinhoe's Pheasant, Gennaeus (Lophura) swinhoei
Elliot's Pheasant, Syrmaticus ellioti
Indian Peafowl, Pavo cristatus
Demoiselle Crane, Anthropoides virgo
Mourning Dove, Zenaidura macroura

Bennett's Wallaby, Protemnodon rufogrisea
Wallaroo, Osphranter robustus
Lion-tailed Monkey, Macaca silenus
North Vietnamese Bear Macaque, Macaca (Lyssodes) speciosa melli
Lar, Hylobates lar
Black-tailed Prairie Dog, Cynomys ludovicianus
Western Canadian Porcupine, Erethizon dorsatum epixanthum
Mara, Dolichotis patagonum
Raccoon, Procyon lotor
Binturong, Arctictis binturong
Canadian Lynx, Felis lynx canadensis
Siberian Tiger, Panthera tigris altaica (longipilis)
Llama, Lama glama
Guanaco, Lama guanicoe
Alpaca, Lama pacos
spotted Fallow Deer, Dama dama
black Fallow Deer, Dama dama var.
Japanese Sika, Pseudaxis nippon
Formosan Sika, Pseudaxis sika taevanus
Red Deer, Cervus elaphus
Manitoba Wapiti, Cervus canadensis manitobensis
Pere David's Deer, Elaphurus davidianus
Mule Deer, Odocoileus hemionus
Northern White-tailed Deer, Odocoileus virginianus borealis
Reindeer, Rangifer tarandus
Pronghorn, Antilocapra americana
Yak, Poephagus grunniens
Plains Bison, Bison bison
Saiga, Saiga tatarica
Mouflon, Ovis musimon

A few comments may be in order.

Egyptian Geese, Mallards and Mottled Ducks breed quite regularly in captivity. Blue Eared Pheasants are reproduced in fair numbers in the collections of hobbyists, wildlife parks and zoos. We failed to repeat our accomplishments of the past — to breed the rarer Brown Eared Pheasant. This year, attempting to force success, we have released one pair of Brown Eared Pheasants near the undeveloped portion of the Zoo, at the so-called easement. Success, however, is still wanting. The White-crested Kalij Pheasants are worth referring to, because the breeding pair was only acquired about half a year prior to the hatching season in 1967; yet this one pair raised no less than twenty-one chicks, all incubator-hatched. The following two, Swinhoe's Pheasants and Elliot's Pheasant, are both considered rare and endangered

birds in the wild state; therefore, we are proud to have contributed to conservation in the raising of these two species. Indian Peafowl and North American Mourning Doves are not difficult to reproduce in captivity, but the raising of Demoiselle Cranes is a rather unusual accomplishment in Zoological Gardens. Ever since 1964, our group of seven adult Demoiselle Cranes have produced healthy offspring each summer. While this report is written, the first 1968 Crane chick is pecking its way from the egg shell to continue this chain of happy events.

Bennett's Wallabies and Wallaroos breed fairly regularly under suitable conditions. In spite of this fact, there are not very many collections in North America which can point to a longer, regular series of success with those species. Lion-tailed Monkeys breed in a certain number of Zoos, but North Vietnamese Bear Macaques are reproduced in captivity only at the two Zoological Gardens of Prague, Czechoslovakia and Winnipeg, Canada. The breeding and raising of a Lar or White-handed Gibbon is still an uncommon achievement, although a breeding pair, once firmly established, will usually produce more than just one offspring. The winter of 1966/1967 was the first one that the Black-tailed Prairie Dogs spent in their newly created open exhibit. Apparently conditions were most suitable for them, because they delighted us with no less than nineteen little ones in the spring of 1967. The Western Canadian Porcupine, while common in the Canadian woods and prairie region, is not a regular breeder in Zoological Parks, but has given birth to healthy offspring in our Zoo repeatedly. A relative of the Porcupine, from South America, the Mara, a long-legged wild Guinea Pig, breeds in Canada nowhere but at the Assiniboine Park Zoo, as far as I know. Raccoon breeding is common in Zoo collections but the reproduction of the Binturong is still considered an unusual occurrence. Our pair of Binturongs has so far produced four litters, three times twins and in their fourth litter, a single offspring. Canadian Lynx have reproduced successfully at our Zoo for many years, and the young ones are invariably born around June 1. While this is written, there are baby Lynx again, born the first week in June 1968. The Siberian Tiger litter of 1967 consisted of one cub only and that one was unfortunately not raised. A thorough investigation proved that the mother probably abandoned the kitten because she felt disturbed by construction noises from outside, near her shelter. At the present time, there is another litter of those valuable and rare Siberian Tigers in the maternity ward, born by the same Tigress and apparently well cared for. Baby Llamas and Guanacos are to be found in many Zoo collections, however, Alpacas do not breed at too many places. We are extremely fortunate in having raised two male and two female young Alpacas in 1967. Spotted Fallow Deer, black Fallow Deer and Japanese Sika are prolific breeders in Zoological Parks, so prolific indeed that the disposal of fawns sometimes becomes a problem. The Formosan Sika, being a rarer form, is valued higher and Formosan Sika fawns are always in demand. Red Deer and Manitoba Wapiti are among the easiest animals to keep in captivity and will breed quite regularly. The story of the Pere David's Deer is entirely different. This is a species not to be found in nature at all, where it became extinct a long while ago, but confined to institutions under human management only. We are privileged to contribute to the propagation of this species of Deer through continued breeding success with our specimens in Winnipeg. Thanks to efforts of the Zoological Society of Manitoba, and to the cordial personal relations between the former President, Dr. Richard Glover and the former Director of the Chicago Zoological Society's Brookfield Zoo, Mr. Robert Bean, we were able to acquire our first pair of Pere David's Deer as a gift from Brookfield. Mule Deer will breed in several Western American collections, but only in one Zoological Park of all of Europe, namely Berlin-Friedrichsfelde. In 1967 we have raised no less than thirteen healthy fawns and hope to be able to supply a number of young Mule Deer to other institutions before very long. A firm order has just been received from the Milwaukee County Zoo. Northern White-tailed Deer breed well, and so do the European Reindeer. The raising of Pronghorn is another matter, not often achieved in captivity. Our accomplishment is particularly noteworthy as both parents were bottle-fed at Aunt Sally's Farm in our Zoo but made perfectly satisfactory and successful parents. To our delight, the twins they raised were two females. Yak and Plains Bison have reproduced here quite regularly. The birth and raising of a Saiga in 1967 was unique for all of America in that year. The youngster, when weaned, was shipped to San Francisco where there were three female Saigas. We would have preferred to bring them to Winnipeg, but the regulations of the United States Department of Agriculture prohibited this. Lastly, young Mouflon are common in many collections.

I almost forgot to mention that we again have a baby Saiga, once more a male, doing well.

FIELD CHECK-LIST OF MANITOBA BIRDS

This is a list of birds of regular or casual occurrence in Manitoba. Species of accidental occurrence have been omitted pending further study.

Compiled June, 1967 by Robert W. Nero and Harold Hosford. Distributed by the Department of Mines and Natural Resources, Conservation Education Section in co-operation with the Manitoba Museum of Man and Nature and the Natural History Society of Manitoba.

Additional copies may be obtained from the Manitoba Museum of Man and Nature and from Room 1000, Norquay Building, Winnipeg.

REGULAR SPECIES: Believed to occur every year in some part of the province during one or more of the seasons.

Total: 271 species.

- Common Loon
- Arctic Loon
- Red-throated Loon
- Red-necked Grebe
- Horned Grebe
- Eared Grebe
- Western Grebe
- Pied-billed Grebe
- White Pelican
- Double-crested Cormorant
- Great Blue Heron
- Black-crowned Night Heron
- Least Bittern
- American Bittern
- Whistling Swan
- Canada Goose
- White-fronted Goose
- Snow Goose
- Mallard
- Black Duck
- Gadwall
- Pintail
- Green-winged Teal
- Blue-winged Teal
- American Widgeon
- Shoveler
- Wood Duck
- Redhead
- Ring-necked Duck
- Canvasback
- Greater Scaup
- Lesser Scaup
- Common Goldeneye
- Bufflehead
- Oldsquaw
- Common Eider
- White-winged Scoter
- Surf Scoter
- Common Scoter
- Ruddy Duck
- Hooded Merganser
- Common Merganser
- Red-breasted Merganser
- Turkey Vulture
- Goshawk
- Sharp-shinned Hawk
- Cooper's Hawk
- Red-tailed Hawk
- Broad-winged Hawk
- Swainson's Hawk
- Rough-legged Hawk
- Golden Eagle

.....Bald Eagle
.....Marsh Hawk
.....Osprey
.....Gyrfalcon
.....Prairie Falcon
.....Peregrine Falcon
.....Pigeon Hawk
.....Sparrow Hawk
.....Spruce Grouse
.....Ruffed Grouse
.....Willow Ptarmigan
.....Rock Ptarmigan
.....Greater Prairie Chicken
.....Sharp-tailed Grouse
.....Ring-necked Pheasant
.....Gray Partridge
.....Turkey
.....Sandhill Crane
.....Virginia Rail
.....Sora
.....Yellow Rail
.....American Coot
.....Semipalmated Plover
.....Piping Plover
.....Killdeer
.....American Golden Plover
.....Black-bellied Plover
.....Ruddy Turnstone
.....Common Snipe
.....Whimbrel
.....Upland Plover
.....Spotted Sandpiper
.....Solitary Sandpiper
.....Willet
.....Greater Yellowlegs
.....Lesser Yellowlegs
.....Knot
.....Pectoral Sandpiper
.....White-rumped Sandpiper
.....Baird's Sandpiper
.....Least Sandpiper
.....Dunlin
.....Short-billed Dowitcher
.....Long-billed Dowitcher
.....Stilt Sandpiper
.....Semipalmated Sandpiper
.....Buff-breasted Sandpiper
.....Marbled Godwit
.....Hudsonian Godwit
.....Sanderling
.....American Avocet
.....Wilson's Phalarope
.....Northern Phalarope
.....Parasitic Jaeger
.....Long-tailed Jaeger
.....Glaucous Gull
.....Herring Gull
.....Ring-billed Gull
.....Franklin's Gull
.....Bonaparte's Gull
.....Forster's Tern
.....Common Tern
.....Arctic Tern
.....Caspian Tern
.....Black Tern
.....Rock Dove
.....Mourning Dove
.....Black-billed Cuckoo
.....Screech Owl
.....Great Horned Owl
.....Snowy Owl
.....Hawk Owl
.....Burrowing Owl
.....Barred Owl
.....Great Gray Owl
.....Long-eared Owl
.....Short-eared Owl
.....Boreal Owl
.....Saw-whet Owl
.....Whip-poor-will
.....Common Nighthawk
.....Chimney Swift
.....Ruby-throated Hummingbird
.....Belted Kingfisher
.....Yellow-shafted Flicker
.....Red-shafted Flicker
.....Pileated Woodpecker
.....Red-headed Woodpecker
.....Yellow-bellied Sapsucker
.....Hairy Woodpecker
.....Downy Woodpecker
.....Black-backed Three-toed Woodpecker
.....Northern Three-toed Woodpecker
.....Eastern Kingbird
.....Western Kingbird
.....Great Crested Flycatcher
.....Eastern Phoebe
.....Yellow-bellied Flycatcher
.....Traill's Flycatcher
.....Least Flycatcher
.....Eastern Wood Pewee
.....Western Wood Pewee

.....Olive-sided Flycatcher
.....Horned Lark
.....Tree Swallow
.....Bank Swallow
.....Rough-winged Swallow
.....Barn Swallow
.....Cliff Swallow
.....Purple Martin
.....Gray Jay
.....Blue Jay
.....Black-billed Magpie
.....Common Raven
.....Common Crow
.....Black-capped Chickadee
.....Boreal Chickadee
.....White-breasted Nuthatch
.....Red-breasted Nuthatch
.....Brown Creeper
.....House Wren
.....Winter Wren
.....Long-billed Marsh Wren
.....Short-billed Marsh Wren
.....Northern Mockingbird
.....Catbird
.....Brown Thrasher
.....American Robin
.....Hermit Thrush
.....Swainson's Thrush
.....Gray-cheeked Thrush
.....Veery
.....Eastern Bluebird
.....Mountain Bluebird
.....Golden-crowned Kinglet
.....Ruby-crowned Kinglet
.....Water Pipit
.....Sprague's Pipit
.....Bohemian Waxwing
.....Cedar Waxwing
.....Northern Shrike
.....Loggerhead Shrike
.....Common Starling
.....Yellow-throated Vireo
.....Solitary Vireo
.....Red-eyed Vireo
.....Philadelphia Vireo
.....Warbling Vireo
.....Black-and-white Warbler
.....Golden-winged Warbler
.....Tennessee Warbler
.....Orange-crowned Warbler
.....Nashville Warbler
.....Yellow Warbler
.....Magnolia Warbler
.....Cape May Warbler
.....Myrtle Warbler
.....Black-throated Green Warbler
.....Blackburnian Warbler
.....Chestnut-sided Warbler
.....Bay-breasted Warbler
.....Blackpoll Warbler
.....Pine Warbler
.....Palm Warbler
.....Ovenbird
.....Northern Waterthrush
.....Connecticut Warbler
.....Mourning Warbler
.....Common Yellowthroat
.....Wilson's Warbler
.....Canada Warbler
.....American Redstart
.....House Sparrow
.....Bobolink
.....Western Meadowlark
.....Yellow-headed Blackbird
.....Red-winged Blackbird
.....Baltimore Oriole
.....Rusty Blackbird
.....Brewer's Blackbird
.....Common Grackle
.....Brown-headed Cowbird
.....Scarlet Tanager
.....Cardinal
.....Rose-breasted Grosbeak
.....Indigo Bunting
.....Evening Grosbeak
.....Purple Finch
.....Pine Grosbeak
.....Hoary Redpoll
.....Common Redpoll
.....Pine Siskin
.....American Goldfinch
.....Red Crossbill
.....White-winged Crossbill
.....Rufous-sided Towhee
.....Savannah Sparrow
.....Grasshopper Sparrow
.....Baird's Sparrow
.....Le Conte's Sparrow
.....Sharp-tailed Sparrow
.....Vesper Sparrow
.....Lark Sparrow
.....Slate-colored Junco
.....Oregon Junco

_____Tree Sparrow
_____Chipping Sparrow
_____Clay-colored Sparrow
_____Harris' Sparrow
_____White-crowned Sparrow
_____White-throated Sparrow
_____Fox Sparrow

_____Lincoln's Sparrow
_____Swamp Sparrow
_____Song Sparrow
_____Lapland Longspur
_____Smith's Longspur
_____Chestnut-collared Longspur
_____Snow Bunting

CASUAL SPECIES: Not believed to occur every year but expected to occur irregularly; five or more records for the province.

Total: 26 species.

_____Common Egret
_____Brant
_____Ross' Goose
_____Cinnamon Teal
_____Harlequin Duck
_____Ferruginous Hawk
_____Whooping Crane
_____American Woodcock
_____Red Phalarope
_____Long-billed Curlew
_____California Gull
_____Yellow-billed Cuckoo
_____Barn Owl

_____Red-bellied Woodpecker
_____Lewis' Woodpecker
_____Say's Phoebe
_____Clark's Nutcracker
_____Carolina Wren
_____Parula Warbler
_____Black-throated Blue Warbler
_____Orchard Oriole
_____Black-headed Grosbeak
_____Dickcissel
_____Lark Bunting
_____Field Sparrow
_____McCown's Longspur

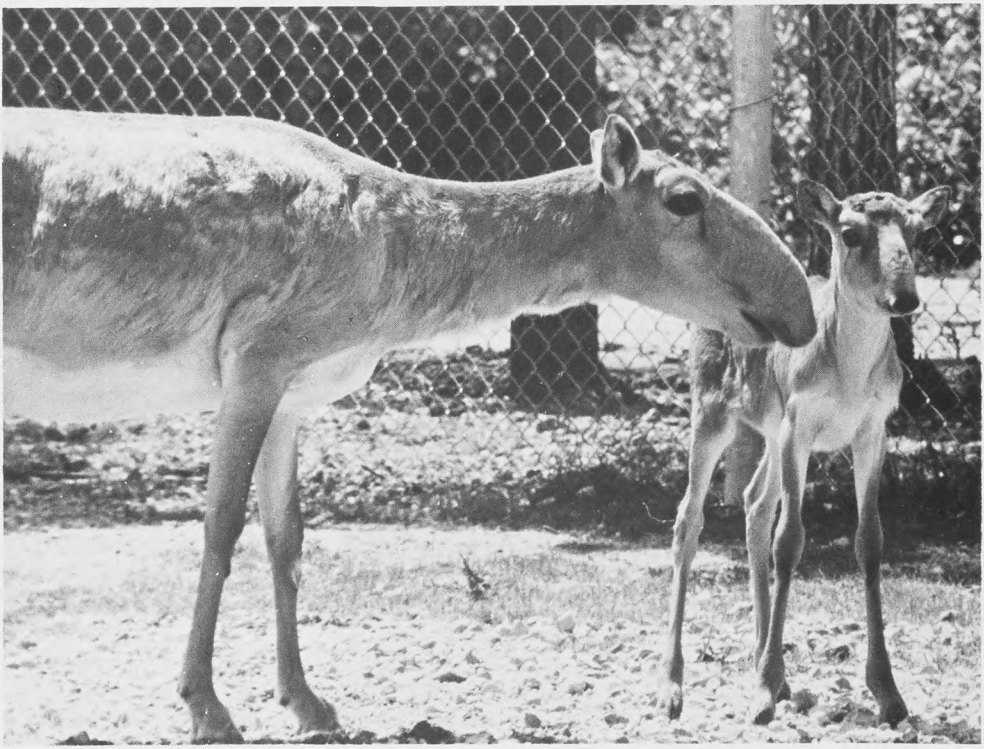
Date ..... **Locality** .....

.....

Observer's Name .....

Notes:

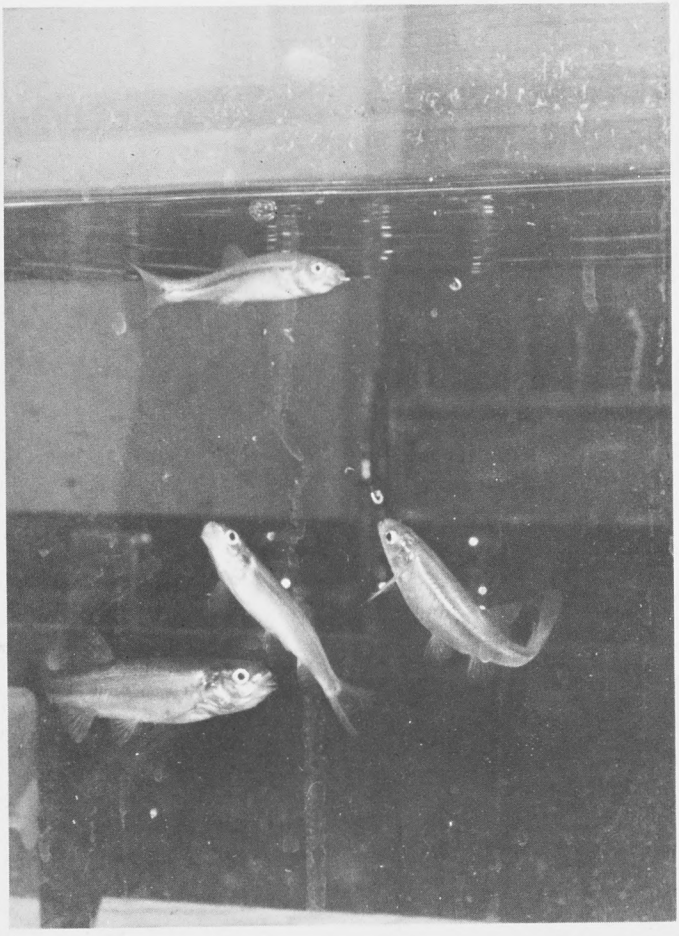
Elroy Limmer, June, 1967



Saiga *(Saiga tatarica)* and baby

Advances in Mosquito Research And Control

R. A. Brust
Associate Professor
Department of Entomology
University of Manitoba



The Fathead Minnow *(Pimephales promelas)*, feeding on Mosquito larvae

Mosquito control is accomplished largely by the use of chemicals applied to larval breeding sites and to adult resting sites. However, biological control and the sterile male technique programs are very active in Canada and around the world. The use of biological control is being investigated at the Dept. of Entomology, and the use of minnows native to Manitoba as well as predatory insects are being considered. All the studies so far have been conducted in the laboratory, and field studies are planned for the future. The fathead minnow, *Pimephales promelas,* Fig. 1, is common in ditches, creeks and small lakes in Manitoba. A single minnow consumes from 125 to 150 mosquito larvae per day. The minnows can live in very shallow water and feed on algae and minute crustaceans when insect larvae are not available. These minnows can be easily transplanted from permanent pools to semi-permanent pools as needed. They are very plentiful in Manitoba and can be cultured in dugouts and creeks. They are able to overwinter in many permanent pools outdoors.

One small isolated pool near Winnipeg was observed to have an abundance of fathead minnows during the past two summers. This past winter we placed a continuous recording thermometer at the site and found that the bottom temperature did not go below 32 C. It is not known whether the pool, which had a maximum depth of 4 ft. in fall, froze to the ground or not. However, the minnows survived easily and are doing well.

The fathead minnow appears in numerous ditches around Winnipeg, and mosquito predator studies last year revealed that these ditches were devoid of mosquito larvae or pupae all summer. The ditches were inspected once each week from May to September. Where no minnows occurred, suitable permanent pools produced from one to four broods of mosquitoes last summer.

Studies are also being carried out on the efficiency of dragon fly nymphs, beetles, water striders and back swimmers as predators of mosquito larvae and pupae. Pools, around Winnipeg, which contained a significant number of predatory insects (one per cubic ft.) were devoid of mosquito larvae.

We know that our major mosquito problem in the Red River Valley arises from temporary pools and not permanent ones. The temporary pools rarely contain predators, and when they do, the predators often arrive after the mosquitoes have emerged. Because the predators are aquatic and cannot withstand drying, they can only exist in permanent pools. However, there are sufficient numbers of mosquitoes breeding in permanent pools, that predaceous insects and minnows should be used and encouraged where possible in a mosquito control program.

To control mosquito larvae in temporary pools, abatement districts must out of necessity, turn to chemical control. However, the types of chemicals used should be selected with great care. Chemicals which continue to build up as residues in soil and vegetation from one year to the next should not be used. Chemical analyses may be done in the area where control work is planned and residue levels determined after 6 months or 1 year following the application.

DDT is widely used in Canada for insect control and is also used for mosquitoes in many regions. In Winnipeg it has been used since 1948, but tests done on soil, water and vegetation in treated areas in 1964 revealed no build up of DDT. In most areas, only slight traces of DDT could be found. However, other areas in Canada are not as fortunate and DDT residues do accumulate. In these areas, Baytex, Abate and Malathion are being used for mosquito control. Malathion is the insecticide of choice for mosquito control programs in the U.S.A. A recent survey showed that 75% of the abatement districts used Malathion for the major part of their control programs. The U.S. sponsored *Aedes aegypti* eradication program in Latin America is carried out by using ultra low volume (ULV) Malathion from aircraft. This spray (3 oz. concentrate per acre) is directed at adult mosquitoes.

New chemicals are always being sought, and Dr. K. N. Saxena of the Dept. of Entomology at Winnipeg is looking for one that will interfere with some stage of mosquito development. This could be a chemical which when applied to the larvae, would prevent them from emerging as healthy adults. Development could proceed for several days after a treatment, but the chemical would produce tissue damage that would be fatal to the insect in its later stages of development. Such chemicals are known for many moths, butterflies and plant sucking bugs. Extracts of juvenile hormone from *Cercropia* will prevent some insects from reaching maturity. Also juvenile hormone-like chemicals can produce this effect in many insects. However, no refined products are known to produce this type of effect in mosquitoes, at least not at a low concentration. Crude juvenile hormone extracts are known to cause significant mortality in *Aedes aegypti,* but at a concentration that affects the development of a host of insects. What is needed is a specific chemical which can destroy some vital process in the mosquito, but not effect other organisms in the environment.

Algae In Manitoba Waters

Dr. Jennifer M. Walker

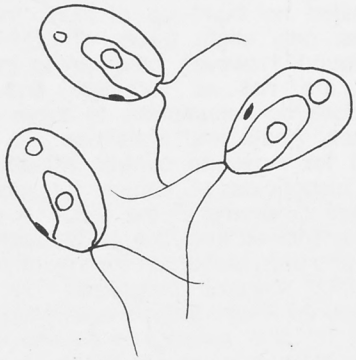
CHLAMYDOMOIYAS

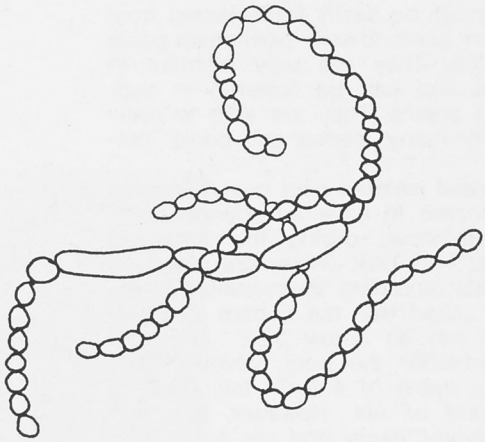
Free swimming

All Microscopic

ANABENA

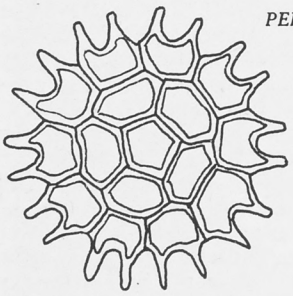
Bead-like Filaments



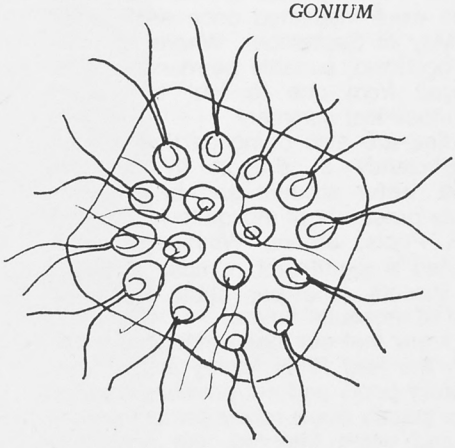


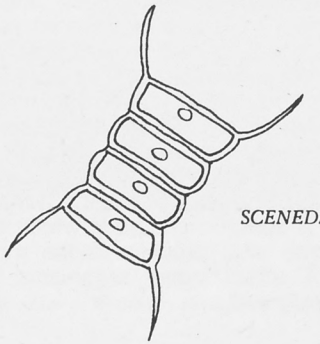
Small regular colonial Algae

PEDIASTRUM



GONIUM





SCENEDESMUS

The human population keeps on increasing and with it man's demand for water. In North America most of us have become accustomed to an abundant, safe and drinkable supply of water, at the turn of a tap we fail to realize that suitable unpolluted water is becoming exhausted.

In clearing and developing the land, man has markedly altered surface runoff and ground seepage. Deforestation, overgrazing, agriculture, fires and drainage have appreciably increased runoff and erosion. Because of this the aquatic environment has altered and thus the organisms that live in it.

Involved in this alteration is a change in the nutrient status. Waters are becoming enriched by the addition of nitrates, phosphates and sulphates (e.g. in runoff and sewage). The natural microflora which could formerly control the balance of these nutrients is no longer able to do so. These enriched waters are excellent for the growth of algae.

In the spring and fall and not infrequently in the summer months, algae in ponds, lakes, marshes and reservoirs may become so abundant as to be very conspicuous. The water becomes cloudy and may have a yellowish or greenish tinge. A floating mat or scum may develop. These manifestations of algal growth are popularly called "blooms". They may follow definite cycles as annual or perennial algae attain their maximum growth. Such concentrations of algae are objectionable not only in public water supplies but also in waters used for bathing, fishing and other recreational purposes.

A variety of algae may be involved, some are microscopic but visible when in vast numbers, (Nostoc, Anabaena), some are threadlike filaments (Cladophora, Spirogyra), others form irregular tubes (Enteromorpha).

They belong to the blue-green, yellow-green and green algal groups, the latter containing the large forms. Bluegreens are the most frequently involved in water contamination giving unpleasant tastes and odours to water. Toxic protein decomposition products are produced by some and have resulted in the death of cattle, while others kill thousands of ducks annually. Their growth is effectively controlled by small amounts of copper sulphate which do not harm fish or waterfowl.

Algae can be of considerable value in helping aerate water, and in fixing elemental nitrogen which upon liberation improves the growth of crop plants. They are encouraged in sewage plants because they utilize nitrates and phosphates and liberate oxygen which is used by the breakdown bacteria.

To really appreciate the beauty and diversity in algae you need a microscope. Many consist of a single cell, some are loose aggregations of a few cells, others consist of a few cells in a definite form. *Nostoc* is an example whose colonies are large enough to see. They form dark green, jelly-like balls. *Spirogyra* is familiar to many because of its bright green colour, unbranched filaments and slim texture, while *Cladophora* is much branched, rough and dull in colour. It grows attached to other plants in shallow water, sometimes forming a thick 'blanket' on the surface. Another mat former is *Enteromorpha,* a tubular alga which looks like a contorted green intestine, hence its specific name *intestinalis*.

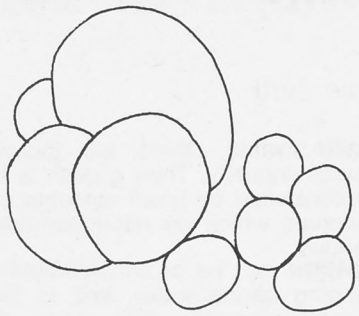
Algae are of vital importance to the survival of other organisms. Water covers 70% of the earth and in these waters are found teeming millions of algae. These green plants can utilize the sun's energy and manufacture food from simple inorganic substances, they are the primary producers of the world. The base on which the rest of life depends.

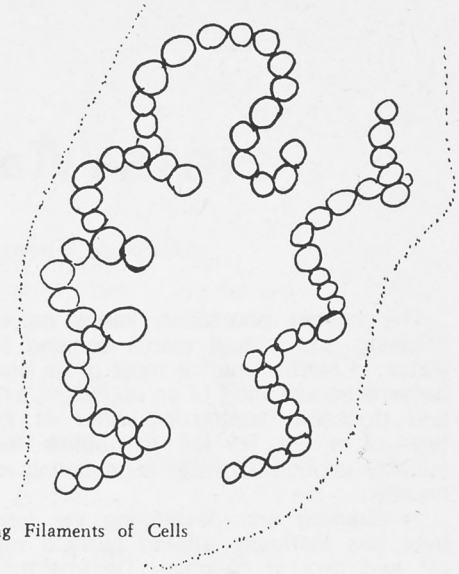
They are the food for zooplankton including water fleas which in turn are later eaten by fish — trout, pickerel, bass — part of the complex food web of any lake or pond.

They are the food for a wide variety of microscopic animals (zooplankton) which are eaten by invertebrates (e.g. blood worms), frogs and small fish. These in their turn may become the food of larger fish (e.g. trout, bass, pickerel) and birds (e.g. ducks, heron). There are innumerable variations on this basic food chain theme, to be found in all Manitoba waters.

NOSTOC

0.5 inch



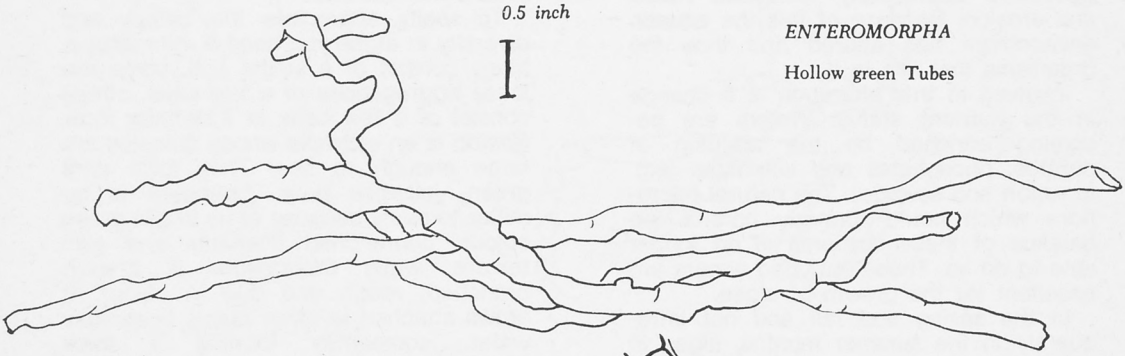


Colonies are in the form of Jelly-like Balls, made up of interwining Filaments of Cells

0.5 inch

ENTEROMORPHA

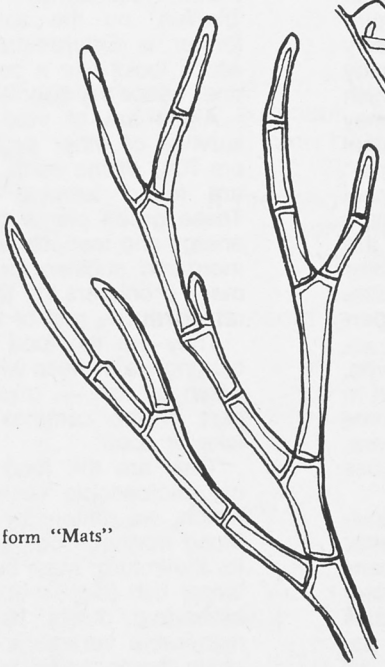
Hollow green Tubes



0.1 inch

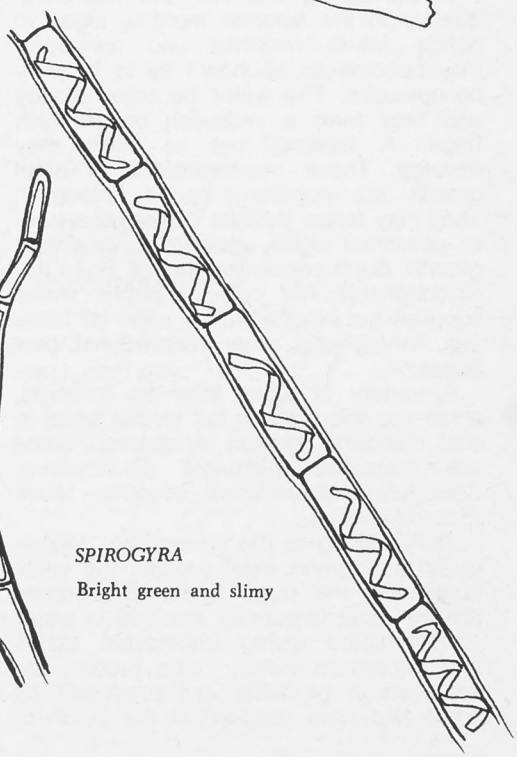
CLADOPHORA

Branched Filaments form "Mats"



SPIROGYRA

Bright green and slimy



The Tale of the Sapling

The sun shines warm upon the earth
so dark and moist.
A seed ensconced in some hard shell
begins to stretch.
Its tiny roots push down
'round rocks and into crevcies.
Pale, juicy, upwards peeks a stem,
breaks through to daylight.
And a tree begins.

Air, warmth and water of the summertime
bring food and breathing to the sapling.
The welcome wet of autumn rains
is grabbed by eager roots and stored.
A tiny snowflake, and another, and then more,
sit gently on the tree's young limbs,
a mantle of protection for the icy winter,
a source of moisture for another spring.

Year in, year out, the tree first pushes up,
its roots creep farther;
and then prepares to go to rest.

The little tree fights with disease,
survives a drought,
and closes wounds.

One day the little tree is big.
Birds live within its luscious shelter,
and eat and sing and nest.

Young children play beneath it,
climb upon its branches,
fill their lungs with air.

And then the father of these children comes,
saws down the tree.

The ever multiplying human needs more room.

To live.
To live?

Dr. H. E. Welch,
110 Thatcher Drive,
WINNIPEG 19, Man.

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THE METROPOLITAN CORPORATION OF GREATER WINNIPEG
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Honour Roll

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ARE GRATEFULLY ACKNOWLEDGED

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